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**ABSTRACT OF THE DISCLOSURE**

A multiple stage Raman amplifier includes an interstage wavelength-selective pump combiner. Wavelength-selection characteristics are such that the pump combiner substantially blocks the passage of the pump signal of the first stage to the second stage and/or vice versa while allowing the passage of the transmission signal from the first stage to the second stage. The pump combiner substantially blocks different portions of the wavelength spectrum of the pump radiation which is fed into the pump combiner from different ports. The pump combiner preferably includes thin-film filters. The pump combiner has the multiple function of coupling the pump signal of the first (or second) pump source and of isolating from one another the pump signals of the two amplification stages. This allows the reduction of the number of passive components present in a multistage optical amplifier, which in turn leads to a decrease of the overall insertion loss in the amplifier and to shorter assembly processing.